Claim Amendments

1.   (previously presented) A system, comprising:

a control card, comprising:

a control processor to execute a control portion of link management;

a line card, comprising:

a line processor to execute an offload portion of the link management, where the line processor is configured to aggregate information related to link failures, such that only one link failure notification is reported to the control card;

a communications port to allow the system to access a high-capacity communications link; and

a backplane to allow the control card and the line card to communicate.

2.   (original) The network device of claim 1, the control processor further comprising a general-purpose processor.

3.   (original) The network device of claim 1, the control processor further comprising an Intel Architecture processor.

4.   (original) The network device of claim 1, the line processor further comprising a network-enabled processor.

5.   (original) The network device of claim 1, the line processor further comprising an Intel IXP processor.

6.   (original) The network device of claim 4, the line processor further comprising at least one reduced instruction set microengine.

7.   (original) The network device of claim 1, the backplane further comprising a physical backplane connection.

8. (original) The network device of claim 1, the backplane further comprising a network.

9. (previously presented) A method of managing links in network, comprising:

receiving traffic link data about aggregation of data links into channels from a control card, the control card including a control processor executing a control portion of link management;

exchanging control link status messages with adjacent peers at a line card, the line card including a line processor configured to execute an offload portion of the link management;

monitoring synchronization of data links in a channel at the line card;

determining if there has been a control link or data link failure at the line card; and

aggregating information related to link failures at the line card, such that only one link failure notification is reported to the control card; and

filtering and validating control packets relating to the link management at the line card.

10. (original) The method of claim 9, comprising identifying link configuration changes and notifying the control card.

11. (original) The method of claim 9, receiving traffic link data further comprising receiving traffic engineered link data in accordance with the Link Management Protocol.

12. (original) The method of claim 9, exchanging control link status further comprising exchanging link status messages.

13. (original) The method of claim 9, monitoring synchronization of data links further comprising:

detecting that a data link has lost synchronization; and

notifying the control card of the loss.

14. (original) The method of claim 9, determining if there has been a control link or data link failure further comprising:

detecting a loss of connectivity in a control channel;

causing an event that notifies the control card; and

setting a status flag indicating that the control channel has failed.

15.   (original) The method of claim 9, determining if there has been a control link or data link failure, further comprising:

determining that a local node is not responding to data link verification message; and

notifying the control card of a data link failure.

16.   (currently amended) A method of establishing an offload portion of link management in a line card, comprising:

initializing the line card;

registering the offload portion of the link management to be executed by a line processor of the ~~line-card~~ line card with a software mechanism;

setting up a control connection of the link management with a control card, the control card including a control processor executing a control portion of the link management;

transmitting resource data to the control card;

receiving configuration information from the control card including information about data links aggregated links into channels;

establishing connections with adjacent peers for each link; and

maintaining the links, where maintaining the links includes aggregating information related to link failures at the line card, such that only one link failure notification is reported to the control card.

17.   (original) The method of claim 16, transmitting resource data further comprising transmitting physical link data, offload-controlled interfaces and processing resources.

18.   (original) The method of claim 16, establishing connections further comprising exchanging link status messages.

19.   (original) The method of claim 16, establishing connections further comprising exchanging messages to verify data links.

20.　(original)　The method of claim 16, establishing connections further comprising exchanging synchronization messages.

21.　(original)　The method of claim 16, maintaining the links further comprising:
monitoring control and data links for failures;
identifying changes in link configurations; and
tracking synchronization in the data links.

22.　(previously presented)　A method of establishing a control portion of link management at a control card, comprising:
initializing the control card;
registering the link management control portion to be executed by a control processor of the control card with a software mechanism;
setting up control connections with line-cards, each line card having a line processor to execute offload portions of the link management, where each line processor is configured to aggregate information related to link failures, such that only one link failure notification is reported to the control card;
aggregating data links into channels; and
configuring the line cards including providing aggregation information.

23.　(original)　The method of claim 22, comprising receiving messages from the offload portions of link management.

24.　(original)　The method of claim 23, comprising updating configuration data based upon the messages.

25.　(previously presented)　An article of machine-readable media containing instructions that, when executed, cause the machine to:
receive traffic link data about aggregation of data links into channels from a control card, the control card including a control processor executing a control portion of link management;

exchange control link status messages with adjacent peers at a line card, the line card including a line processor configured to execute an offload portion of the link management;

monitor synchronization of data links in a channel at the line card;

determine if there has been a control link or data link failure at the line card; and

aggregate information related to link failures at the line card, such that only one link failure notification is sent to the control card; and

filter and validate control packets relating to the link management at the line card.

26.   (original) The article of claim 25, the instructions further causing the machine to identify link configuration changes and notify the control card.

27.   (original) The article of claim 25, the instructions causing the machine to exchange control link status further causing the machine to exchange HELLO messages in accordance with the Link Management Protocol.

28.   (original) The article of claim 25, the instructions causing the machine to monitor synchronization of data links further causing the machine to:

detect that a data link has lost synchronization; and

notify the control card of the loss.

29.   (original) The article of claim 25, the instructions causing the machine to determine if there has been a control link or data link failure further causing the machine to:

detect a loss of connectivity in a control channel;

cause an event that notifies the control card; and

set a status flag indicating that the control channel has failed.

30.   (original) The article of claim 25, the instructions causing the machine to determine if there has been a control link or data link failure, further causing the machine to:

determine that a local node is not responding to data link verification message; and

notify the control card of a data link failure.